REMARKS

Summary of Changes Made

The Application was filed with 14 claims, and claims numbering up to 23 were later added. Claims 2, 3, 7-9, 11-14, 21, and 22 had been canceled previously. Accordingly, claims 1, 4-6, 10, 15-20, and 23 (12 claims) are pending in the application. No new matter has been added.

Claim Rejections – 35 U.S.C. 103(a)- (Zecchino/Kojima)

Claims 1, 4-6, 10 and 15-20 and 23 are rejected as obvious in view of U.S. Pat. No. 6497887 to Zecchino et al., ("Zecchino") in view of U.S. Pat. App. Pub. No 2002/0068683 to Kojima, ("Kojima").

The Examiner summarily notes that Zecchino anticipates the instantly claimed invention except for the volumetric limitations. The Examiner admits that no cited reference discloses or suggests the volumetric limitations of the claims. The Examiner cites Kojima only for an alleged disclosure that "the formation of wettable objects is [sic] any shape is well known in the art, as evidenced by the previous teachings (e.g., Figure 6F) of Kojima." It is believed that the "previous teachings" of Kojima refer to citations therefrom in a previous Office Action, as no other mention of Kojima is made in the present Office Action. No cited art discloses or suggests any particular volumetric limitation.

Applicants first question the Examiner's reasoning and opinion that example 2 discloses a freeze-dried membrane which is free of ingredients which are consistent with the definition of "protein-based skeleton forming agents" which the examiner identifies as enzymes, hormones etc., according to page 8, lines 5-9 of the specification as filed.

The cited paragraph of Zecchino does not refer to the definition of protein-based skeleton forming agents but instead to protein-based *active substances,* which are *explicitly not excluded* from the invention by use of the phrase "skeleton-forming agents, proteins being excepted." According to page 6, lines 14-18, skeleton-forming agents are understood to be hydrocolloids, which form gels or viscous solutions in aqueous systems. The definition cited by the examiner clarifies that the group of proteinic skeleton-forming agents does not include protein-based active

substances such as enzymes or hormones. Instead proteinic skeleton-forming agents are understood to be proteinic hydrocolloids as in particular collagen or collagen derivatives as pointed out on page 1, lines 24 – 30 of the specification.

As already pointed out by the Examiner, Example 2 of Zecchino includes soluble collagen. Furthermore the examiner cites *Hawley's Condensed Chemical Dictionary 13th Ed.*, which defines "soluble collagen" as a "fibrous collagen". Fibrous collagen and thus soluble collagen, accordingly, is well known to exhibit skeleton-forming properties as soluble collagen may be submitted to cross-linking e.g. by high heat. The Applicants invite the Examiner to review U.S. Pat. No. 4,795,467, (3 Jan 1989), available at the filing date of Zecchino, which refers to different collagen derivates, *inter alia* soluble collagen, and the possibility of cross-linking such collagen derivatives, for example by heat treatment (see e.g. col. 3 line 45 – col. 4 line 40). Cross-linking of collagen by high heat during a freeze-drying process is further well-known as so called dehydrothermal cross-linking. This clearly indicates that soluble collagen according to example 2 of Zecchino **is indeed a protein-based skeleton-forming agent**, which is excluded from the present invention.

Furthermore Zecchino explicitly refers to membranes based on freeze-dried, partially cross-linked gel networks of polymeric material with sufficient structure to permit survival of the freeze-drying process (col. 2, lines 10-13). Suitable polymer materials are defined in column 2, lines 24–34, which refers to polymers which produce a fibrous type of gel network when cross-linked and which facilitates withstanding the freeze-drying process. Exemplary fibrous gel network forming polymers include collagen as well as hydrolyzed collagen. Furthermore the suitability of the collagen polymer for cross-linking is mentioned and at column 2 lines 62-63, Zecchino discloses that partial cross-linking forms an adequately supportive network which is clearly understood by the skilled artisan to be a skeleton-forming structure.

It thus becomes apparent from Zecchino in combination with the knowledge of a skilled person that collagen, (e.g. fibrous soluble collagen), indeed is a protein-based skeleton-forming agent and thus example 2 does not teach the actual composition of the present invention, wherein protein-based skeleton-forming agents are excluded. Zecchino thus fails to disclose the instantly claimed subject matter.

As mentioned above Zecchino explicitly refers to partially cross-linked delivery systems. In contrast, the present invention distinguishes from cross-linked articles and refers to easily soluble porous articles, which despite the missing cross-links surprisingly exhibit sufficient mechanical strength for forming stable freeze-dried shaped articles. Such non-cross-linked porous articles exhibit enhanced solubility as described on page 17 lines 23-32 of the specification. In contrast the partially cross-linked membranes according to Zecchino must be rubbed into the skin. At col. 4, line 62 through col. 5, line 7 it becomes even more apparent that dissolution of the partially cross-linked membranes according to Zecchino is worse than the extremely fast dissolution of the non-cross-linked articles according to the present invention.

A person skilled in the art would not learn from Zecchino to provide non-cross-linked freeze-dried shaped articles with sufficient mechanical strength to withstand the freeze-drying process, which exhibit an extremely high dissolution rate.

Separately, Applicants strongly disagree that the disclosure of "wettable objects of any shape" leads directly or indirectly to the shapes and volumes instantly claimed. Indeed, only Applicants' disclosure teaches such limitations.

Based on the foregoing, the presently claimed invention, in particular, claims 1, 4-6, 10, 15-20 and 23, is patentable over the cited prior art.

New Claims

Claim 24 further limits the method according to claim 1 in that it clarifies that the shaped article is not cross-linked. Such limitation becomes apparent from the above cited paragraph referring to enhanced solubility (specification page 17, lines 23-32). Furthermore this limitation can be drawn from page 7 lines 7-9, wherein the use of alginates with extremely low calcium contents as preferred skeleton-forming agents is outlined. Calcium ions exhibit cross-linking properties in alginates and thus form insoluble calcium alginates.

In claim 25, a further limitation is directed to embodiments, wherein at least one of the skeleton-forming agents is selected from a low-viscosity skeleton-forming agent with a viscosity of less than 2000 mPas as such low viscosity skeleton-forming agents support the high dissolution rate of the shaped articles according to the invention. Support for this claim is found at page 7, lines 5-16.

New claim 26 further limits the low-viscosity skeleton-forming agent to be selected from the group of alginates. Support for this claim is found at page 7 lines 3-27.

New claim 27 limits the skeleton-forming agent to a sodium alginate with a calcium content of less than 3 wt.%, which is for the above given reasons preferred in non-cross-linked alginate materials with enhanced solubility.

Neither Zecchino nor Kojima, nor a combination of both refers to such limitations in the skeleton-forming agents or the shaped articles obtained therefrom. Furthermore such limitations could not obviously be taken from the cited prior art.

Applicants respectfully request entry of the new claims and an indication of their allowability.

Conclusion

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. GIL-16027.

Respectfully submitted,

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